Documentation of Environmental Indicator Determination
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: **KLI, Inc.**
Facility Address: **16174 Industrial Drive, Milford, VA 22514**
Facility EPA ID #: **VAD052356623**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

✓ If yes - check here and continue with #2 below.

_____ If no - re-evaluate existing data, or

_____ if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND
Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS

status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	✓			chromium, chlorinated organics
Air (indoors)[2]		✓		
Surface Soil (<2 ft)		✓		
Surface Water		✓		
Sediment				
Subsurf. Soil (>2 ft)	✓			chromium, acetone
Air (outdoors)		✓		

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

✓ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):
See attached page

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile

contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

1. Groundwater – YES

REFERENCE: All information in Department files.

RATIONALE: Two (2) former surface impoundments are a source of groundwater contamination. Eleven (11) monitoring wells are gauged as part of the Post-Closure Care of the Surface Impoundments. The groundwater flows generally from the north towards the south, in the direction of the unnamed tributary of the Mattaponi River. Five monitoring wells are sampled quarterly for inorganics and select organic compounds in accordance with the Post-closure Care Permit. Total and hexavalent chromium have been detected in monitoring well MW-7S above the MCL. The last four data sets (third quarter 2002 through second quarter 2003) have total chromium concentrations below the MCL of 100 micrograms per liter. Recent data shows low levels of chlorinated organics in the groundwater, but below MCLs and Permitted Groundwater Protection Standards. The plant used to derive its drinking water from an onsite well, but since the plant is no longer operational, there is no groundwater use.

2. Air (indoors) – NO

REFERENCE: *Annual 2002 Groundwater Monitoring Report, former KLI, Inc. Facility*; March 4, 2003

RATIONALE: Data from latest annual groundwater monitoring report show detectable levels of 1,1-dichloroethylene; 1,1-dichloroethane; trichloroethylene; and 1,1,1-trichloroethane. However, the highest levels of these VOCs are below drinking water MCLs or RBC tapwater levels, as applicable. Therefore, it can be reasonably assumed that such low levels in groundwater would not result in concentrations in indoor air that are above acceptable risk levels.

3. Surface Soil – NO

REFERENCE: 1) *RCRA Facility Assessment, Keller Industries, Inc., Milford, Virginia*; January 1989; 2) *RFI Data Presentation, KLI, Inc., EPA ID No. VAD052356623*; October 12, 2001

RATIONALE: No visual indications of surface (<2 ft bgs) soil contamination were observed during the 1989 visual site inspection (VSI) for the RFA nor in the samples that were collected during the investigation in 2001.

4. Surface Water – NO

REFERENCE: *RCRA Facility Assessment, Keller Industries, Inc., Milford, Virginia*; January 1989

RATIONALE: There is no surface water within the facility. Surface runoff from the facility discharges to a wetlands area immediately to the south which feeds an unnamed tributary of the Mattaponi River. Although overflows in the early 1980's from the surface impoundment were documented, all regulated hazardous wastes management units have since been either clean closed or capped. Since run-off is cannot contact any contaminated soils (see item #3 above and #5 below concerning surface and subsurface soils, respectively), it is reasonable to assume that the facility is not currently contributing contamination to surface waters above appropriately protective risk-based levels.

5. Subsurface Soil – YES

REFERENCE: 1) *RCRA Facility Assessment, Keller Industries, Inc., Milford, Virginia*; January 1989; 2) *RFI Data Presentation, KLI, Inc., EPA ID No. VAD052356623*; October 12, 2001

RATIONALE: Although contaminated sludges and liner materials were removed from the surface impoundment prior to cap construction, underlying contaminated soils were left in place. Levels of chromium in these soils were found as high as 920 mg/kg prior to closure. More recently (2001), elevated levels of chromium (790 mg/kg) and trace levels of acetone were found in subsurface soils at other SWMUs.

6. Air (outdoors) – NO

REFERENCE: *Annual 2002 Groundwater Monitoring Report*, former KLI, Inc. Facility; March 4, 2003

RATIONALE: Data from latest annual groundwater monitoring report show detectable levels of 1,1-dichloroethylene; 1,1-dichloroethane; trichloroethylene; and 1,1,1-trichloroethane. However, the highest levels of these VOCs are below drinking water MCLs or RBC tapwater levels, as applicable. Therefore, it can be reasonably assumed that such low levels in groundwater would not result in concentrations in outdoor air that are above acceptable risk levels.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

Contaminated Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	NO	NO	NO	NO			NO
~~Air (indoors)~~	##	##	##				##
~~Soil (surface, e.g., <2 ft)~~	## ##	##	##	##	##	##	
~~Surface Water~~	## ##	##			##	##	
Sediment							
Soil (subsurface e.g., >2 ft)				NO			NO
Air (outdoors)	##	##	##	##	##		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

✓ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

_____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):
Groundwater - see attached page, Item #1
Soil (subsurface) - see attached page, Item #2

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

1. Groundwater

REFERENCE: All available information within the Department files.

RATIONALE:

Residents

NO – The facility is located in an industrial park, and there is no information indicating the presence of residents on the facility.

Workers

NO – The facility has been closed and inactive since approximately 1999. Therefore, there are no workers currently at the facility.

Day-Care

NO – There is no information indicating the presence of a day-care on the facility or in the immediate vicinity.

Construction

NO – The facility has been closed and inactive since approximately 1999. Therefore, there are no ongoing or planned construction activities that may come into contact with groundwater.

Food

NO – There is no information indicating that food is grown in or comes into contact with groundwater at the facility.

2.. Soil (subsurface)

REFERENCE: All available information within the Department files.

RATIONALE:

Construction

NO –

A post-closure care permit prohibits any disturbance of the cap and, thus, prevents contact with contaminated subsurface soils from the surface impoundment. Since the facility has been closed and inactive since approximately 1999, there are no ongoing or planned construction activities that may come into contact with contaminated subsurface soils from other SWMUs.

Food

NO – There is no information indicating that food is grown in or comes into contact with contaminated subsurface soils at the facility.

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

Current Human Exposures Under Control
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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

✓ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the KLI, Inc. facility, EPA ID # VAD052356623, located at Milford, VA under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

_____ NO - "Current Human Exposures" are NOT "Under Control."

_____ IN - More information is needed to make a determination.

Completed by (Original Signed) Date 9/29/03
(print) Garwin W. Eng
(title) Env. Engr. Sr.

Supervisor (Original Signed) Date 9/29/03
(print) Leslie A. Romanchik
(title) Director, Office of Waste Permitting
(EPA Region or State) VA DEQ

Locations where References may be found:

VA Department of Environmental Quality, Office of Waste Permitting files

Contact telephone and e-mail numbers:

(name) Garwin W. Eng
(phone #) (804) 698-4131
(fax #) (804) 698-4234
(e-mail) gweng@deq.state.va.us

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.